DEPARTMENT OF THE NAVY
HEADQUARTERS UNITED STATES MARINE CORPS
WASHINGTON, DC 20380-0001

MCO 10200.5
LA-PST-dt
12 Jun 89

MARINE CORPS ORDER 10200.5

From: Commandant of the Marine Corps
To: Distribution List

Subj: ADVANCE LOGISTICS ORDER FOR THE AUTOMATIC TEST STAND, TRANSMISSION (ATTS)

Ref: (a) MCO P5000.10B

Encl: (1) Materiel Fielding Plan

1. Purpose. To inform field commanders, per the reference, of new equipment scheduled for issue to their commands. The enclosure contains detailed information to issue, deploy, and sustain the Test Stand, Transmission.

2. Background

a. Origin of Requirements. The vast majority of motor transport, tracked vehicles, and combat engineer equipment currently being introduced into the Marine Corps inventory has automatic or power-shift transmissions. As transmissions used by the Marine Corps become more varied and complex, two concurrent needs have arisen in the Fleet Marine Force (FMF): the need to troubleshoot/diagnose transmissions before disassembling them; and the need to test them after repairs are completed. Troubleshooting/diagnosing the transmissions before disassembly saves time and manpower, thus improving the efficiency of the maintenance operation. Testing repaired transmissions greatly reduces the number of defective transmissions which after being installed into a vehicle or returned to stock as Condition Code A must again be returned for additional repairs. The ATTS has been procured to alleviate these deficiencies.

b. Operational Characteristics and Capabilities. The ATTS is commercial-off-the-shelf equipment. It is manufactured by Aidco Incorporated as their model 850M. The ATTS is intended to support fourth echelon repair operations and is primarily a garrison item intended to be deployed only when fixed or semi-fixed bases are established. It tests various transmissions by subjecting them to a simulated operational environment. The four basic sub-units of the ATTS are: the power unit, the dynamometer units, the operator's console, and the transmission oil preheat and supply cart (which was added to save time and oil and to prevent oil mixing).

(1) Power Unit. The power unit houses six components: the main drive motor, the Wye-delta starter, the main hydraulic reservoir, the hydraulic fluid cooling system (heat exchanger), the primary hydrostatic pump, and the hydrostatic motor.

(a) The main drive motor is an induction type electric motor requiring 460 volts alternating current (Vac), three phase power. This motor is rated at 200 horse power (HP) continuous at 3,545 revolutions per minute (RPM).

(b) The Wye-delta starter is attached to the power unit and is equipped with thermal switches designed to protect the motor from overload damage.

(c) The main hydraulic reservoir is of the closed loop type and has a capacity of 260 gallons. It is able to maintain its oil temperature at a level not less than 100 degrees Fahrenheit and is equipped with oil filters and an oil level sight gage.

(d) The hydraulic fluid cooling system uses an oil and water heat exchanger capable of holding system oil temperature below 180 degrees Fahrenheit (in ambient temperatures not in excess of 110 degrees Fahrenheit). To regulate the cooling of the hydraulic fluid, an electric solenoid valve automatically opens and closes, controlling water flow through the heat exchanger.

(e) The hydrostatic pump is a heavy duty, highspeed, variable displacement pump capable of continuous full displacement operation at the full rated motor speed. It is coupled to the electric motor and is capable of developing a maximum displacement of 6 cubic inches and a maximum system pressure of 6,000 pounds per square inch (psi). It is capable of 4,000 rpm continuous operation. The motor functions in a load responsive manner and approximates the power characteristic of an internal combustion engine while using the full capability of the main electric drive motor.

(f) The hydrostatic motor drives the output shaft which drives the transmission under test with the power provided by the hydrostatic pump.

(2) Dynamometer Units. The dynamometer units consist of three components: the base/sump section and the two power absorption units (dynamometers). Both dynamometer units will be employed to test cross-drive transmissions (one on either output shaft). One dynamometer is required to test "in-line" type transmissions.

(a) The base/sump section doubles as a transmission fluid drain reservoir with a sump pump for returning fluid through a filter to the main reservoir. A screened grate-type cover

capable of supporting 300 pounds covers the sump. The base section is also equipped with a track for the mobile power absorption units.

(b) The power absorption units are hydrostatically self-contained. They have a heavy-duty frame and are mounted on rollers which align and roll on a tracked section of the base.

(c) The units wedge-lock to the track and are vertically adjustable by means of hand crank actuated lead-screws. The dynamometer assemblies consist of a housing, flywheel, load pump, transmission coupling, and stall torque device. The flywheel is capable of providing 157 pounds per square foot of inertia. The load pump is capable of providing a maximum of 470 foot pounds (ft-lb) load torque available from 0 to 4,000 rpm.

(3) Operator's Console. There are two operator's consoles for the ATTS; one console is part of the main ATTS unit while the other is mobile mounted. These two consoles contain the instruments and controls necessary to test transmissions using the ATTS.

(4) Transmission Oil Preheat and Supply Cart. A mobile, stand alone transmission oil preheat and supply cart will be provided with the ATTS. The cart has two stationary and two caster wheels, a pull handle and capacity of 55 U.S. gallons. The cart also contains plumbing, controls, an electric motor, a pump, a filter, and an oil heater.

(a) The cart will be used primarily to store Dexron II transmission oil for use with Allison in-line type transmissions. When using the oil supply of the cart, the main reservoir oil supply will not be in use. This will ensure that mixing of the different oils does not occur. Oil will be preheated in the cart then pumped from the cart to the transmission under test and returned to the cart for storage upon completion of the test.

(b) The cart will be fielded during the 4th quarter of fiscal year (FY) 1989.

c. Replaced Items. The ATTS does not replace any equipment currently in the Marine Corps inventory.

d. Related New Systems. The wide variety of models and configurations of automatic transmissions currently available or planned for procurement by the Marine Corps requires that any tester be versatile and upgradable. The ATTS is provided with adapter kits which allow different models and configurations of transmissions to be mounted on and operated with the ATTS. The

ATTS and its associated adapter kits shall provide fourth echelon the capability to test, troubleshoot, and certify automatic transmissions as rebuilt condition code A. As new transmissions are introduced into the inventory, additional adapters can be fabricated to accommodate them, thereby expanding the usefulness of the ATTS.

e. Logistics Data

(1) Name: Test Stand, Transmission (ATTS)

(2) Manufacturer/model number: Aidco, Inc./850M

(3) JTEDS nomenclature: N/A

(4) TAM No.: C92102B

(5) ID No.: 09013A

(6) NSN: 4910-01-243-4637

(7) Unit of issue: ea

(8) Unit standard package: 1 (in 3 crates)

(9) Unit cost: $140,000

(10) Length: 231 in

(11) Width: 194 in

(12) Height: 78 in

(13) Square: 320 fty

(14) Cube: 2,084 ft(3)

(15) Weight: 9,600 lb

(16) Standardization: yes

(17) Combat active replacement factors: N/A

(18) Power requirements: 110 Vac, 60 Hz, 20 amp. single phase) and 460 Vac, 60 Hz, 220 amp. (3 phase)

(19) MHE lift/motor transport requirements: 5-ton forklift
5-ton trucks

(20) Environmental requirements: Well lit, ventilated, and enclosed area (30 by 25 by 10 ft.) with at least a 6-inch thick concrete floor. Ear and eye protection is required. Also, see paragraph 12 of the enclosure.

3. Action

a. Gaining Command. Per paragraph 13 of the enclosure.

b. Commanding General (CG), Marine Corps Research, Development and Acquisition Command (MCRDAC)

(1) Ensure action is initiated to reflect appropriate current allowance data on equipment allowance file to approximately coincide with the projected in-service date.

(2) Provide guidance to appropriate activities to initiate the fielding process or notify activities of any problems or issue that delay fielding beyond the projected in-service date.

(3) Coordinate on-site operation and maintenance training when requested by using units.

(4) Develop and issue a Transmission Test Procedures Manual by the 2d quarter of FY 1990.

c. CG Marine Corps Logistics Base (MCLB), Albany. No action required in connection with the fielding of this item.

4. Point of contact for this document is the CG MCRDAC (PST), Washington, DC 20830-0001, AUTOVON 225-4692.

5. Reserve Applicability. This Order is applicable to the Marine Corps Reserve.

RAY "M" FRANKLIN
By direction

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MATERIEL FIELDING PLAN

1. General Information

a. Fielding Plan. The ATTS has been force-fed to the eight units listed in appendix A to this enclosure. Oil preheater supply carts and an adaptor kit for the M1A1 tank transmission will be fielded the 4th quarter of FY 1989.

b. Schedule of Events. The using unit, with base maintenance support, will install the ATTS per the manufacturer's instructions which are contained in the commercial manual. Figures 1 and 2 are provided for information.

c. Essential Points of Contact. The point of contact at MCRDAC is Code PST-E, AUTOVON 225-4692 or commercial (202) 695-4692. For logistics assistance during and after fielding, the point of contact at MCLB (Code 835) Albany, AUTOVON 567-6536/7 or commercial (912) 439-6536/7.

2. Supply Support/Provisioning Availability Schedule

a. Repair Parts Support. The ATTS is classified as commercial-off-the-shelf equipment as defined in the current edition of MCO 4890.1 and is noncritical, low density. Provisioning will not be accomplished by MCLB Albany. Commercial sources will be used for supply support (this action has been coordinated with MCLB (Code 835) Albany.

b. Retrofit and Modification Kits. No retrofit or modification kits are required. However, two parts kits were overpacked with the ATTS. Kit No. 22K1832 contains oil filters. Kit No. 22K1845 contains two each, 10,000 pound pressure gauges, one each, 6,000 pound pressure gauge, one magnetic pickup, and one set of drive motor coupling inserts. These items are contractor overpacks and are not required to be maintained in quantity or accounted for as end item equipment.

3. Maintenance Concept. Levels and echelons of maintenance for test equipment are contained in SC-6625/2. Maintenance of the ATTS will be accomplished by the using unit. The using units will be guided by SI-4910-40/1 for repair of the ATTS. Records of equipment maintenance will be per the current edition of TM 4700-15/1.

a. Organizational Level Maintenance. Organizational level maintenance will be performed by the using unit and will consist of inventory, oil replacement, filter changes, lubrication, minor adjustments, routine checks, and cleaning.

b. Intermediate Level Maintenance. For instructions relative to intermediate maintenance level of repair on the ATTS during its first 24 months of operation, reference the warranty section (paragraph 8, following). After the warranty has expired, intermediate level repair will be performed by the using unit (Military Occupational Specialties (MOS's) 3522 (Intermediate Automotive Mechanic) and 2142 (Assault Amphibious Vehicle Repairer)). Repairs after expiration of the warranty will include diagnosing failures, repair, and/or replacement of failed parts/components and calibration. The ATTS is fully reparable at the fourth echelon level of maintenance.

(1) Calibration. Calibration is required per the current edition of TI-4733-15/1. The pressure and temperature gauges will be calibrated once every 24 months using test procedures 1720 MPO6 and 1720 STO2 respectively.

(2) Special Calibration. Special calibration per the current edition of MCO 4733.1, based on the using unit's need, is strongly encouraged. Additionally, the ATTS is a candidate for the Sliding Calibration Interval Program per the current edition of TI-4733-15/2.

c. Depot Level Maintenance. There is no depot level maintenance required for the ATTS.

d. Contractor Support Requirements. Contractor support or technical representation per the current edition of TI-4733-15/6 has not been contracted for.

4. Support Equipment

a. General Purpose Test Equipment. The Calibration Facility, Transportable, Table of Authorized Materiel Control Number (TAMCN) A0175; the Test Instrument Repair Facility, TAMCN A2695; and the Mechanical Calibration and Repair Facility, TAMCN A0173 contain all required test equipment and calibration standards to conduct fourth echelon maintenance. However, procurement of a Hydraulic In-Line Tester for use as a system calibration transfer standard is planned for early FY 1990. The tester will become a component of A0173. Calibration will be supported by the local Electronic Maintenance Calibration Facility.

b. Special Purpose Test Equipment. Special purpose test equipment, adapters, extenders, or tools are not required.

c. Other Support Equipment and Interfaces. It is recommended that an overhead crane with a lifting capacity of 5 tons (minimum) be provided for loading and unloading transmissions onto and off of the ATTS. The crane will also be used for relocating the load absorbtion units when changing from in-line to cross-drive transmissions and vice versa. An alternative to a crane is the use of a forklift of the appropriate capacity that has a boom attachment and a lifting sling/hook. The boom and hook must be capable of withstanding loads in excess of 2 tons.

5. Transportation, Storage, Packaging, and Handling Requirements

a. Transportation. The ATTS is not readily transportable due to its large size and extensive facilities/utilities requirements; therefore, it is considered to be primarily a garrison item. The ATTS is delivered in three crates (measuring 89 by 151 inches, 83 by 48 by 153 inches, and 84 by 72 by 92 inches) which weigh a total of 16,000 pounds.

b. Storage. The crated ATTS requires 245 square feet of storage space, or 1,335 cubic feet. For inside storage, the ATTS would require all unpainted surfaces to be rust protected, oil resevoirs and cooling system drained and all open plumbing sealed. For outside storage the ATTS would require all of the above, plus disassembly, crating, and weather proofing.

c. Handling. A 5-ton forklift with 7-foot forks is required to handle the crated ATTS. The crate would have to be sufficiently rigid to withstand handling by a forklift.

d. Packaging. Approximately one man-week of preparation and packaging will be required before an operational ATTS can be transported to a new location. A properly disassembled and packaged ATTS is truck transportable. Technical guidance in selecting packaging and packing procedures shall be taken from MIL-STD-794.

6. Technical Data and Configuration Management Requirements

a. Manuals. Draft commercial operation, maintenance, and parts manuals are overpacked and will be used to support the ATTS until the approved manuals are available the 4th quarter FY 1989. MCLB Albany will stock extra copies which may be requisitioned through normal supply channels. A technical manual (TM) describing the proper procedures for testing Marine Corps automatic and power shift transmissions using the ATTS is currently being developed. A preliminary draft manual for some Marine Corps transmission is expected to be available by the 4th quarter of FY 1989. A final version will be available by the 2d quarter of FY 1990.

Publication No.	Title of Publication	PCN Number
TBD	Commercial Manual (Draft manual overpacked)	TBD
TBD	Test Procedures for Marine Corps Automatic Transmissions	TBD

b. Configuration Management Requirements. No Marine Corps configuration management is required. The ATTS is a commercial of-the-shelf asset procured for the FMF per the current edition of MCO 10510.18. The Marine Corps did not procure any configuration management data rights.

7. Computer Resources Support. None.

8. Warranty Provisions

a. Warranty Coverage and Duration. Drive train components, including electric motor, hydrostatic drive system (consisting of pump and motor), and the hydrostatic load pump are warranted against defects in material and workmanship for 2 full years following installation and start-up of the test stand. The test stand and related parts not covered in the 2-year warranty, are warranted against defects in material and workmanship for 1 full year following installation and start-up. If installation and start-up are delayed beyond 3 months following delivery of the equipment, the warranty period begins 3 months following delivery. In addition, the following points should be noted with respect to the warranty.

(1) An equipment failure is defined as any "out of specification" condition that cannot be corrected by the using unit, using routine maintenance/calibration procedures.

(2) Charges for labor performed by the Government will not be borne by the contractor.

(3) With respect to defective supplies, the warranty will include replacement of the failed part(s) to the using unit by the contractor without cost to the Government.

(4) All units who do warranty work themselves have the responsibility for the disposition of defective parts per instructions from the warranty administrator MCLB (Code 835) Albany, GA 31704-5000 AUTOVON 567-6536.

b. Administering the Warranty. Standing operating procedures (SOP's) for using units implementing the warranty must be established to be sure that warranty procedures are followed. This is mandatory so that the Government may realize all of the benefits the warranty is intended to provide. The following warranty actions apply:

(1) All Active and Reserve units should process warranty claims through the force service support group (FSSG) or maintenance channels that normally provide maintenance/supply support.

(2) Establishment of an installation/base warranty coordinator is required.

(3) Maximum cooperation between the contractor or their representative and the user is desired and necessary. Do not participate in warranty disputes. Follow local SOP's and the procedures detailed in this fielding plan when there is evidence that a warranty part is defective and that a replacement part is due the Government.

(4) All warranty claims will be handled by the warranty administrator, MCLB (Code 835) Albany, GA 31704-5000.

(5) If a warranty defect arises, prepare a Quality Deficiency Report (QDR) per the current edition of MCO 4855.10. Immediately forward a copy marked "Warranty Defect" to CG MCRDAC (PST), Washington, DC 20380-0001 and CG MCLB (Codes 835 and 856) Albany, GA 31704-5000. This will provide for technical review and evaluation to minimize misunderstandings between the Marine Corps and the contractor.

c. National Stock Numbers (NSN's) Covered by the Warranty. The NSN for the ATTS and its components is 4910-01-234-4637. The various components, piece parts, and the adaptor kits are identified by the manufacturer's part number.

9. Training Requirements

a. Introductory Operator and Maintenance Personnel Training. The operator and the maintainer will be the same person. A manufacturers technical representative will conduct an on-site, 5-day (maximum) course covering both maintenance and proper operation of the equipment using transmissions supplied by the Marine Corps. At least one in-line and one cross drive type transmission must be available for start-up and training to assure that trainees are instructed in both systems. A representative will be available at each using unit within

30 working days of notification by the Marine Corps that installation has been completed and personnel are ready for start-up and training. Manufacturers training will be a one-time occurrence.

b. Follow-On Training. The Marine Corps Service Support Schools at Camp Lejeune, North Carolina, and the Schools Battalion at Camp Pendleton, California, will integrate operator and maintenance training on the ATTS into their normal course of instruction for MOS's 3522 and 2142. Assets are not currently available for use by other MOS's that currently engage in transmission testing and repair (including MOS's 1341 (Engineer Equipment Mechanic), 2143 (Self-Propelled Artillery Repairer), and 2145 (Combat Tank Repairer/Technician)); however, if additional ATTS's are acquired in the future, operator and maintenance training for the ATTS will be incorporated into the normal course of instruction for additional MOS's. Follow on training will be conducted as routine on-the-job training.

10. Facilities Requirements/MILCON Project Status. The facilities/utilities requirements for the ATTS and its components have been incorporated into the facilities support requirements since January 1986. The ATTS necessitates the use of reinforced concrete foundation with a minimum thickness of 6 inches. The ATTS requires minimum space of 25 feet by 22 feet by 10 feet in height. Figure 1 depicts a frontal view of the space requirements, and figure 2 depicts an overhead view. The electrical requirements are 110 Vac, 60 Hz, 20 amps, single phase and 460 Vac, 60 Hz, 220 amp, three phase. A circuit breaker rated at 460 Vac, 250 amp, three phase is required but not supplied by the manufacturer. Water is required from a 3/4-inch outlet which is capable of supplying 25 gallons per minute (gpm) at a minimum pressure of 40 psi. In addition, compressed air is required at a rate of 5 cubic feet per minute (CFM) with a pressure of 125 psi.

11. Personnel Requirements. The personnel required for the maintenance and operation of the ATTS are described in paragraph 9. As an MOS's 3522, and MOS 2142. No additional personnel are required to operate the ATTS.

12. Special Instructions. Due to the noise level and the presence of hot oil under high pressure, both ear and eye protection are required. Additionally, provisions must be made for the disposal of contaminated/waste oil (e.g., a pump or gravity drain to an outside waste oil tank).

13. Gaining Command Responsibility. This is a summary of actions necessary to place the ATTS in service.

a. Obtain consumables. Consumables will be acquired through the Direct Support Stock Center per local supply procedures.

b. Perform acceptance inspection upon receipt.

c. Submit controlled item report.

d. Request authorization to place the ATTS in-service.

APPENDIX A

LIST OF ALLOWANCES

T/E No.	Unit	Qty.
7011	MCLB Barstow	1
7014	MCLB Albany	1
7550	MC Service Support Schools, CamLej	1
7630	SchoolsBn, MCB, CamPen	1
N-3136	GSMCo, MaintBn, 1stFSSG	1
N-3236	GSMCo, MaintBn, 2dFSSG	1
N-3336	GSMCo, MaintBn, 3dFSSG	1
N-3436	GSMCo, MaintBn, 4thFSSG	1
	Total	8

APPENDIX B

TRANSMISSION ADAPTOR KITS CROSS-REFERENCE TABLE

Manufacturer	Model	Application	Aidco P/N	Transmission NSN
Allison	MT-650	M867 Utility	22K1721-C	2520-01-050-2075
Allison	MT-653	LAV	22K1721-C	2520-01-221-7819
Allison	MT-654	939 Trucks	22K1721-C	2520-01-117-3010
Allison	TMH-400	CUCV	22K1728-C	2520-01-146-5482
Allison	THM-400	HUMMV	22K1728-C	2520-01-161-2136
Allison	HT-740	LVS MK48	22K1719-C	2520-01-012-1937
Allison	XTG-411-2A	M109/ M109A1/ M109A3 M109A2/ M578	22K1716-C	2520-00-894-9533
Allison	X11003B	M1A1 Tank	TBD	2520-01-207-3527
Allison	XT-1410 Re-triever	M88A1 Tank	22K1717-C	2520-00-692-5286
Allison	750DRD	CRF, P19A	TBD	2520-01-181-1335
Clark	HR 328320	7 1/2-Ton Crane	22K1722-C	2520-00-624-7322
Clark	HR 18325	7 1/2-Ton Crane	22K1723-C	2520-01-095-6849
Clark	3HR 18314-2	4,000 LB Forklift	22K1723-C	TBD
FMC	HS-400 3A1	AAV7A1	22K1725-C	2520-01-113-6132
Caterpillar	NA	D7G Dozer	22S789-A	2520-01-161-4941

Manufacturer	Model	Application	Aidco P/N	Transmission NSN
Caterpillar	NA	130G Grader	22S1120-A	2520-01-152-7143
Caterpillar	NA	621B Scraper	22S1221-A	2520-01-171-8529
Caterpillar	NA	988 Forklift	22S1226-A	2520-TBD
Caterpillar	NA	STD. YOKE Adaptor	22S1226-A	NA

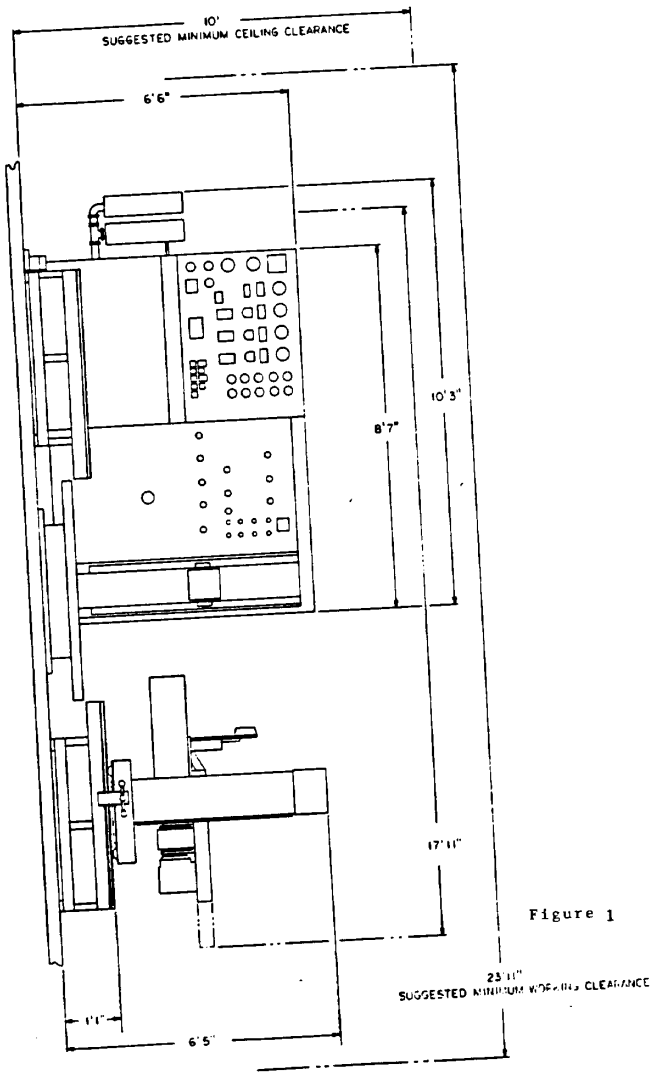

Figure 1

Figure 1.--Frontal View.

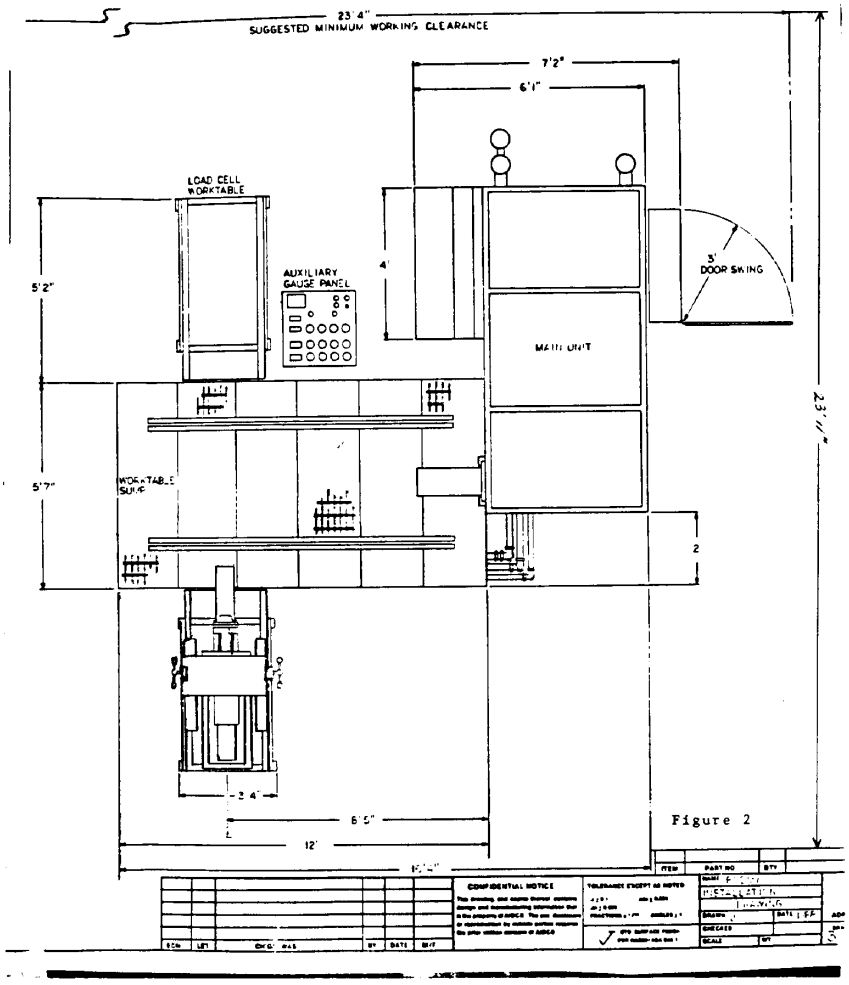

Figure 2.--Top View.

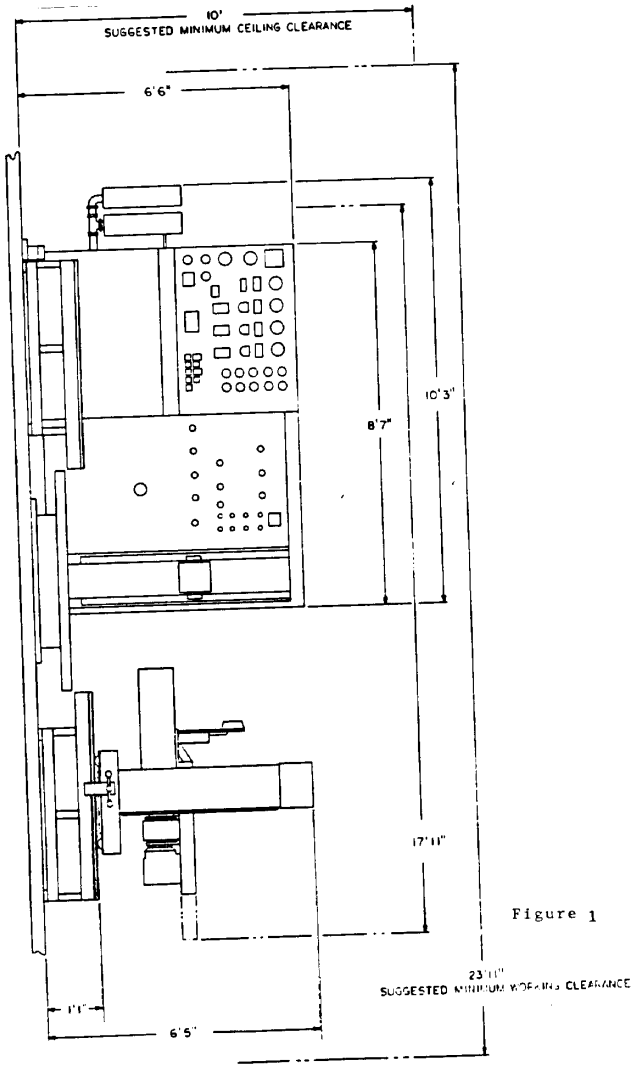

Figure 1

Figure 1.--Frontal View.

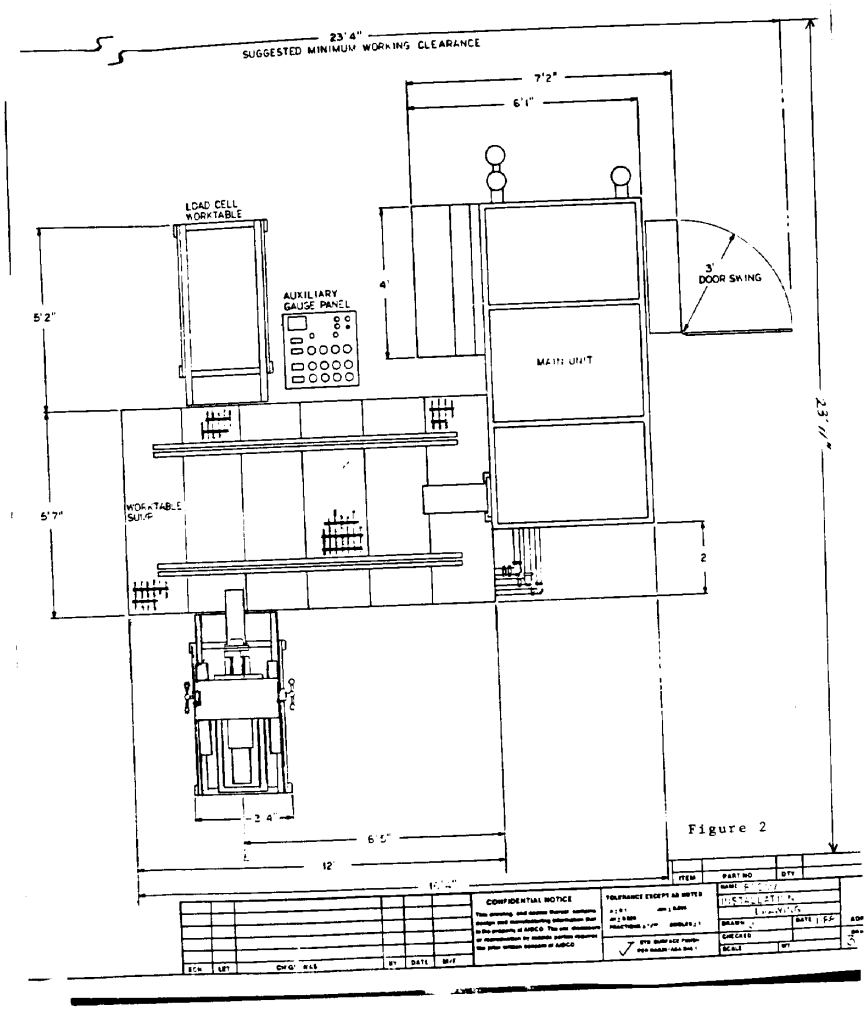

Figure 2.--Top View.